# ULTRASONIC IMAGING

*An International Journal*

*Editor-in-Chief*
MELVIN LINZER

*Associate Editors*
A. C. KAK
S. J. NORTON
T. H. SHAWKER

VOLUME 7, 1985

ACADEMIC PRESS, INC.
Harcourt Brace Jovanovich, Publishers
San Diego Orlando New York Austin London
Montreal Sydney Tokyo Toronto

Copyright © 1985 by Academic Press, Inc.
All rights reserved

No part of this publication may be reproduced or transmitted in any form or by any means, electronic or mechanical, including photocopy, recording, or any information storage and retrieval system, without permission in writing from the copyright owner.

The appearance of the code at the bottom of the first page of an article in this journal indicates the copyright owner's consent that copies of the article may be made for personal or internal use, or for the personal or internal use of specific clients. This consent is given on the condition, however, that the copier pay the stated per copy fee through the Copyright Clearance Center, Inc. (27 Congress Street, Salem, Massachusetts 01970), for copying beyond that permitted by Sections 107 or 108 of the U. S. Copyright Law. This consent does not extend to other kinds of copying, such as copying for general distribution, for advertising or promotional purposes, for creating new collective works, or for resale. Copy fees for pre-1985 articles are the same as those shown for current articles.

0161-7346/85 $3.00

MADE IN THE UNITED STATES OF AMERICA

# Contents of Volume 7

## Number 1, January 1985


Mani Azimi and A. C. Kak. An Analytical Study of Doppler Ultrasound Systems ..... 1

Takuso Sato, Akira Fukusima, Nobuyuki Ichida, Hiroyuki Ishikawa, Hirohide Miwa, Yutaka Igarashi, Takaki Shimura, and Keiichi Murakami. Nonlinear Parameter Tomography System Using Counterpropagating Probe and Pump Waves ..... 49

Philip E. Aylward, Boyd N. Knosp, David D. McPherson, Doug A. Eltoft, Charles E. Yurkonis, Judith A. Bean, David J. Skorton, and Steve M. Collins. Two-Dimensional Echocardiographic Image Texture Analysis: Reduction of Regional Variability Using Polar Coordinates ..... 60

Program and Abstracts. Tenth International Symposium on Ultrasonic Imaging and Tissue Characterization, June 3–5, 1985, Washington, DC ..... 74


## Number 2, April 1985


J. J. Nicoll, J. M. Piggins, W. N. McDicken, and R. Borthwick. Improved Mirror Systems for High Resolution Ultrasonic Imaging ..... 107

J. Ophir, M. A. Ghouse, and L. A. Ferrari. Attenuation Estimation with the Zero-Crossing Technique: Phantom Studies ..... 122

M. J. Cloostermans, W. A. Verhoef, and J. M. Thijssen. Generalized Description and Tracking Estimation of the Frequency Dependent Attenuation of Ultrasound in Biological Tissues 133

B. J. Oosterveld, J. M. Thijssen, and W. A. Verhoef. Texture of B-Mode Echograms: 3-D Simulations and Experiments of the Effects of Diffraction and Scatterer Density ..... 142

V. L. Newhouse and Israel Amir. Estimation of Scatterer Volume Density Near a Concentration Gradient ..... 161

S. M. Gehlbach, F. G. Sommer, and R. A. Stern. Scatterer-Induced Frequency Variations in Reflected Acoustic Pulses: Implications for Tissue Characterization ..... 172

Jin H. Kim, Bum S. Lee, and Song B. Park. Prior Inverse Filtering for the Improvement of Axial Resolution ..... 179

Ira J. Fink, Donald L. Miller, Thomas H. Shawker, Mary Girton, and Kathleen Morrish. Lipid Emulsions as Contrast Agents for Hepatic Sonography: An Experimental Study in Rabbits ..... 191

Comments

R. J. Dickinson: Comment on Vaknine, R., and Lorenz, W. J. Lateral Filtering of Medical Ultrasonic B-Scans before Image Generation, *Ultrasonic Imaging* **6**, 152–158 (1984) ... 198

R. Vaknine. Response to Comment on Vaknine, R., and Lorenz, W. J. Lateral Filtering of Medical Ultrasonic B-Scans before Image Generation, *Ultrasonic Imaging* **6**, 152–158 (1984) 200


## Number 3, July 1985


Philip S. Green and Marcel Arditi. Ultrasonic Reflex Transmission Imaging ..... 201

Seung-Woo Lee and Song-Bai Park. A New Scan Conversion Algorithm for Ultrasound Compound Scanning ..... 215

Göran Salomonsson and Benny Löfström. Analysis of a System for Ultrasonic Imaging of Attenuation and Texture in Soft Tissue ..... 225

Roman Kuc and Hilda Li. Reduced-Order Autoregressive Modeling for Center-Frequency Estimation ..... 244

J. A. Zagzebski, E. L. Madsen, and M. M. Goodsitt. Quantitative Tests of a Three-Dimensional Gray Scale Texture Model ..... 252

Anthony J. Devaney. Generalized Projection-Slice Theorem for Fan Beam Diffraction Tomography ..... 264

P. LAUGIER, G. BERGER, M. FINK, AND J. PERRIN. Specular Reflector Noise: Effect and Correction for *in Vivo* Attenuation Estimation ..... 277
J. OPHIR, A. GOBUTY, N. MAKLAD, T. TYLER, P. JAEGER, AND R. MCWHIRT. Quantitative Assessment of *in Vivo* Backscatter Enhancement from Gelatin Microspheres ..... 293
B. A. ROBERTS AND A. C. KAK. Reflection Mode Diffraction Tomography ..... 300
JEAN-PIERRE ARDOUIN AND A. N. VENETSANOPOULOS. Modelling and Restoration of Ultrasonic Phased-Array B-Scan Images ..... 321
AUTHOR INDEX FOR VOLUME 7 ..... 345
SUBJECT INDEX FOR VOLUME 7 ..... 347